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RECD 02 AUG 2004
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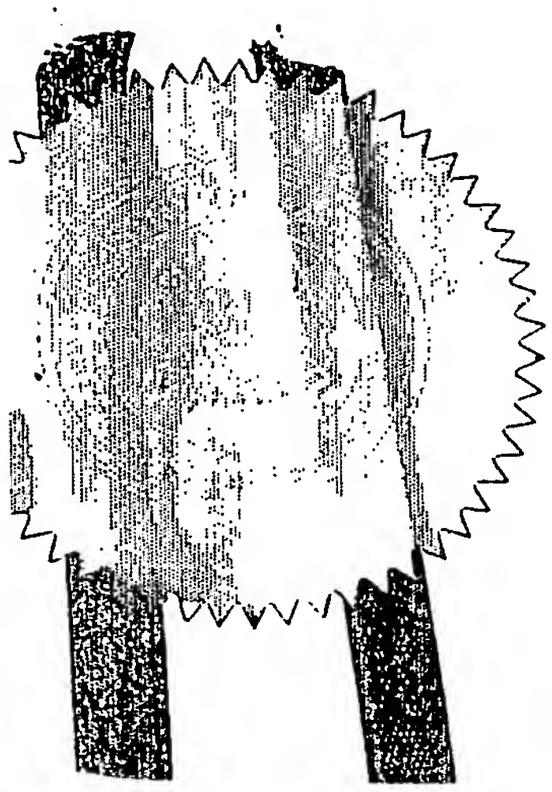
Date of Filing	:	18 JUL 2003
Application Number	:	200303726-4
Applicant(s) / Proprietor(s) of Patent	:	STARHUB PTE LTD; INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE
Title of Invention	:	MESSAGE SYSTEM

Sharmaine Wu (Ms)
Assistant Registrar
for REGISTRAR OF PATENTS
SINGAPORE

19 Jul 2004



PRIORITY DOCUMENT
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G00001

PATENTS FORM 1
Patents Act
(Cap. 221)
Patents Rules
Rule 19

INTELLECTUAL PROPERTY OFFICE OF SINGAPORE

REQUEST FOR THE GRANT OF A PATENT UNDER SECTION 28

101101

* denotes mandatory fields

1. YOUR REFERENCE*: MJ/JN/rma/PAT/8113984/SG

2. TITLE OF INVENTION*: MESSAGE SYSTEM

3. DETAILS OF APPLICANT(S)* (see note 3) Number of applicant(s): 02

(A) Name: STARHUB PTE LTD

Address: 51 CUPPAGE ROAD,
#07-00, STARHUB CENTRE,
SINGAPORE 229469

State: Country: SG

[X] For corporate applicant [ ] For individual applicant

State of incorporation: State of residency:

Country of incorporation: SG Country of residency:

[ ] For others (please specify in the box provided below)

(B) Name: INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE

Address: 8 TEMASEK BOULEVARD,
#14-00 SUNTEC TOWER THREE,
SINGAPORE 038988

State: Country: SG

[X] For corporate applicant

State of incorporation

Country of incorporation SG

[ ] For individual applicant

State of residency

Country of residency

[ ] For others (please specify in the box provided below)

(C) Name

Address

State

Country

[ ] For corporate applicant

State of incorporation

Country of incorporation

[ ] For individual applicant

State of residency

Country of residency

[ ] For others (please specify in the box provided below)

[ ] Further applicants are to be indicated on continuation sheet 1

4. DECLARATION OF PRIORITY (see note 5)

A. Country/country designated

File number

Filing Date DD MM YYYY

B. Country/country designated

File number

Filing Date DD MM YYYY

[ ] Further details are to be indicated on continuation sheet 6

5. INVENTOR(S)* (see note 6)

A. The applicant(s) is/are the sole/joint inventor(s) Yes [ ] No [X]

(MJ|JN|rma|PAT|8113984|SG)
New Application

B. A statement on Patents Form 8 is/will be furnished Yes [X] No [ ]

6. CLAIMING AN EARLIER FILING DATE UNDER (see note 7)

[ ] section 20(3) [ ] section 26(6) [ ] section 47(4)

Patent application number

DD MM YYYY

Filing Date

Please mark with a cross in the relevant checkbox provided below
(Note: Only one checkbox may be crossed.)

[ ] Proceedings under rule 27(1)(a)

DD MM YYYY

Date on which the earlier application was amended

[ ] Proceedings under rule 27(1)(b)

7. SECTION 14(4)(C) REQUIREMENTS (see note 8)

Invention has been displayed at an international exhibition. Yes [ ] No [X]

8. SECTION 114 REQUIREMENTS (see note 9)

The invention relates to and/or used a micro-organism deposited for the purposes of disclosure in accordance with section 114 with a depository authority under the Budapest Treaty.

Yes [ ] No [X]

9. CHECKLIST*

(A) The application consists of the following number of sheets

I.	Request	5	Sheets
II.	Description	8	Sheets
III.	Claim(s)	4	Sheets
IV.	Drawing(s)	1	Sheets
V.	Abstract (Note: The figure of the drawing, if any, should accompany the abstract)	1	Sheets
Total number of sheets		19	Sheets

(B) The application as filed is accompanied by:

[ ] Priority document(s) [ ] Translation of priority document(s)

(MJJN|rma|PAT|811398H|56)
New Application

☐ Statement of inventorship & right to grant

☐ International exhibition certificate

10. DETAILS OF AGENT (see notes 10, 11 and 12)

Name

Firm DREW & NAPIER LLC

11. ADDRESS FOR SERVICE IN SINGAPORE* (see note 10)

Block/Hse No. | Level No. | Unit No./PO Box 152

Street Name ROBINSON ROAD

Building Name

Postal Code 900302

12. NAME, SIGNATURE AND DECLARATION (WHERE APPROPRIATE) OF APPLICANT OR AGENT* (see note 12)
(Note: Please cross the box below where appropriate.)

☒ I, the undersigned, do hereby declare that I have been duly authorised to act as representative, for the purposes of this application, on behalf of the applicant(s) named in paragraph 3 herein.

DD MM YYYY

17 07 2003

Name and Signature
DREW & NAPIER LLC

(ML/JN/rma/PAT/81139841(56)
New Application

N/

NOTES:

1. This form when completed, should be brought or sent to the Registry of Patents together with the rest of the application. Please note that the filing fee should be furnished within the period prescribed

2. The relevant checkboxes as indicated in bold should be marked with a cross where applicable.

3. Enter the name and address of each applicant in the spaces provided in paragraph 3.
Where the applicant is an individual
- Names of individuals should be indicated in full and the surname or family name should be underlined.
-The address of each individual should also be furnished in the space provided.
- The checkbox for "For individual applicant" should be marked with a cross.

Where the applicant is a body corporate
- Bodies corporate should be designated by their corporate name and country of incorporation and, where appropriate, the state of incorporation within that country should be entered where provided
- The address of the body corporate should also be furnished in the space provided.
- The checkbox for "For corporate applicant" should be marked with a cross.

Where the applicant is a partnership
- The details of all partners must be provided. The name of each partner should be indicated in full and the surname or family name should be underlined.
- The address of each partner should also be furnished in the space provided.
- The checkbox for "For others" should be marked with a cross and the name and address of the partnership should be indicated in the box provided

4. In the field for "Country", please refer to the standard list of country codes made available by the Registry of Patents and enter the country code corresponding to the country in question.

5. The declaration of priority in paragraph 4 should state the date of the previous filing, the country in which it was made, and indicate the file number, if available. Where the application relied upon in an International Application or a regional patent application e g European patent application, one of the countries designated in that application [being one falling under section 17 of the Patents Act] should be identified and the country should be entered in the space provided.

6 Where the applicant or applicants is/are the sole inventor or the joint inventors, paragraph 6 should be completed by marking with a cross the 'YES' checkbox in the declaration (A) and the 'NO' checkbox in the alternative statement (B). Where this is not the case, the 'NO' checkbox in declaration (A) should be marked with a cross and a statement will be required to be filed on Patents Form 8.

7. When an application is made by virtue of section 20(3), 26(6) or 47(4), the appropriate section should be identified in paragraph 6 and the number of the earlier application or any patent granted thereon identified. Applicants proceeding under section 26(6) should identify which provision in rule 27 they are proceeding under. If the applicants are proceeding under rule 27(1)(a), they should also indicate the date on which the earlier application was amended.

8. Where the applicant wishes an earlier disclosure of the invention by him at an International Exhibition to be disregarded in accordance with section 14(4)(c), then the 'YES' checkbox at paragraph 7 should be marked with a cross Otherwise, the 'NO' checkbox should be marked with a cross.

9. Where in disclosing the invention the application refers to one or more micro-organisms deposited with a depository authority under the Budapest Treaty, then the 'YES' checkbox at paragraph 8 should be marked with a cross. Otherwise, the 'NO' checkbox should be marked with a cross. Attention is also drawn to the Fourth Schedule of the Patents Rules.

10. Where an agent is appointed, the fields for "DETAILS OF AGENT" and "ADDRESS FOR SERVICE IN SINGAPORE" should be completed and they should be the same as those found in the corresponding Patents Form 41. In the event where no agent is appointed, the field for "ADDRESS FOR SERVICE IN SINGAPORE" should be completed, leaving the field for "DETAILS OF AGENT" blank

11. In the event where an individual is appointed as an agent, the sub-field "Name" under "DETAILS OF AGENT" must be completed by entering the full name of the individual. The sub-field "Firm" may be left blank. In the event where a partnership/body corporate is appointed as an agent, the sub-field "Firm" under "DETAILS OF AGENT" must be completed by entering the name of the partnership/body corporate. The sub-field "Name" may be left blank.

12. Attention is drawn to sections 104 and 105 of the Patents Act, rules 90 and 105 of the Patents Rules, and the Patents (Patent Agents) Rules 2001.

13 Applicants resident in Singapore are reminded that if the Registry of Patents considers that an application contains information the publication of which might be prejudicial to the defence of Singapore or the safety of the public, it may prohibit or restrict its publication or communication. Any person resident in Singapore and wishing to apply for patent protection in other countries must first obtain permission from the Singapore Registry of Patents unless they have already applied for a patent for the same invention in Singapore. In the latter case, no application should be made overseas until at least 2 months after the application has been filed in Singapore, and unless no directions had been issued under section 33 by the Registrar or such directions have been revoked. Attention is drawn to sections 33 and 34 of the Patents Act.

14. If the space provided in the patents form is not enough, the additional information should be entered in the relevant continuation sheet. Please note that the continuation sheets need not be filed with the Registry of Patents if they are not used.

(MJ[JN|rma|PAT|8113984|SG)
New Application

159159
C00002

MESSAGE SYSTEM

FIELD OF INVENTION

The invention relates to a system for communication between an Internet browser and a mobile telecommunication device.

BACKGROUND

Currently mobile phone subscribers can send and receive SMS (short message service) or MMS (multimedia message service) messages to and from other mobile phone users. This two-way messaging is only available to mobile phone subscribers through mobile telecommunication devices.

One-way messaging is also available between a sending party using an Internet enabled device via a web browser and a receiving mobile phone subscriber. The sender of the message uses a telecommunication service provider to send the SMS or MMS message to the mobile telecommunication device subscriber. No reply can be sent to the Internet browser from the mobile telecommunication device.

Several systems have been proposed to overcome this problem.

US patent 6,178,331 describes a bi-directional multiplexing messaging gateway for wireless devices such as mobile phones. The patent describes that when a message is sent from an outside email source the gateway may create a new temporary MSISDN number associated with the reply address before sending the message and reply MSISDN to the mobile phone. The user of the mobile phone can then reply to the message and the MSISDN is sent back to the gateway with the reply message. The gateway then maps the MSISDN back to the address of the original sender. However, this system requires that the sender have an email address. The system does not work when the sender doesn't have an email address.

US patent 6,085,100 describes a system for sending and receiving short messages. When an external device is used to send an SMS to a mobile phone, the SMS is first routed through a gateway. The gateway stores in a database the address to which the SMS is being sent, a time stamp and the address of the external device. When the mobile phone user replies to the message it is sent back to the gateway with the timestamp. The gateway uses a combination of the time stamp and the destination address of the mobile phone to search the database and find the address of the external device. The reply is then sent on to the external device. This system is more complex and relies on the use of date and time stamping to identify the originating device. If two or more messages are sent to the same mobile subscriber within a second the system will not be able to determine to which sender to a response should be directed. Another disadvantage is that the temporary source address, as a combination of Gateway Application address, date, and time stamp could be very long. The address may be too long for the SMS message signal to accommodate and will not work for Internet SMS.

PCT patent publication WO 02/058356 describes a method for sending MMS messages between mobile phones via the Internet. The originating mobile phone is connected to the Internet via a public land mobile network (PTMN). When the originating mobile phone sends an MMS message to a receiving mobile phone, the message is first routed to an MMS server. The message lists the receiving mobile phone by its MSISDN number (essentially the phone number of the mobile phone). The message server sends a notification message to a PAP server. The PAP server determines whether the receiving mobile phone is currently communicating with the Internet. If the receiving device is communicating with the Internet the PAP server sends the receiving mobile notification that there is an MMS message at the MMS server. If the receiving device is communicating with the Internet via a different PTMN than that which is being used by the originating mobile phone, or the receiving mobile phone is not communicating with the Internet, the MMS server sends an SMS to the receiving mobile using the MSISDN number of the receiving mobile. This invention will only work between two mobile devices with existing MSISDN numbers. It is not suitable for communication between mobile phones and web browsers.

SUMMARY OF INVENTION

It is the object of this invention to provide a method of two-way communication between a web browser and a mobile telecommunication device or to at least provide the public with a useful choice.

In broad terms in one aspect the invention comprises a method of two-way communication between a web browser and a mobile telecommunication device including the steps of; accessing a web-site via a computer, sending a message to a mobile telecommunication device from the web-site, and at a message server capturing the IP address and port number of the computer, assigning a temporary phone number to the IP address and port number of the computer, storing the temporary phone number, IP address of the computer and port number of the computer in a database, and sending the message to the mobile telecommunication device with the temporary phone number.

Preferably the message server further includes the step of capturing the receiving mobile telecommunication device number.

Preferably the message server further includes the step of sending an acknowledgement to the web-site. The acknowledgement may include instructions to keep the web-site open in order to receive replies from the mobile telecommunication device.

In broad terms in another aspect the invention comprises a message server arranged to capture an IP address and port number of a computer sending a message to a mobile telecommunication device via a web-site, capture the message sent by the computer, assign a temporary phone number to the IP address and port number of the computer, store the temporary phone number, IP address of the computer and port number of the computer in a database, and send the message to the mobile telecommunication device with the temporary phone number.

Preferably the message server is further arranged to capture the receiving mobile telecommunication device number.

Preferably the message server is further arranged to send an acknowledgement to the web-site. The acknowledgement may include instructions to keep the web-site open in order to receive replies from the mobile telecommunication device.

Preferably the web site is provided by a telecommunication service provider.

A set number of temporary phone numbers may be available for assigning by the message server.

The message server may further be arranged so that upon receipt of a message from a mobile telecommunication device sent to a temporary phone number of the message server, it will capture the message, temporary phone number, and the receiving mobile telecommunication device number, use the database to match the temporary phone number to a computer IP address and port number and the receiving mobile telecommunication device number, and send the message to the computer with the matching IP address and port number.

BRIEF DESCRIPTION OF DRAWINGS

The invention including a preferred form thereof will be further described with reference to the accompanying figure in which;

Figure 1 shows a communication system for communication between a web site and a mobile telecommunication device.

DETAILED DESCRIPTION

Figure 1 shows a communications system of the invention. The communications system includes a computer 1 connected to the Internet 2. Web server 3 is also

connected to the Internet. Web server 3 is further connected to message server 4. Message server 4 includes database 5 and translation table 6. Message server 4 is connected to telecommunication network 7. Telecommunication network 7 includes Mobile Switching Centres (MSC) 8, Base Station Controllers (BSC) 9, Base Transceiver Stations (BTS) 10 and cell phone towers 11.

A user wishing to send a message via the Internet to a mobile telecommunication device accesses the Internet 2 using computer 1. The user accesses a web site via the Internet. The web site may be stored on web server 3. Using the web site the user types a message to be sent to a mobile telecommunication device as well as the phone number of the mobile telecommunication device. When the user has finished writing the message the user selects a send function on the web site. The message is then sent from the web server 3 to message server 4.

Upon receipt of a message from web server 3, message server 4 captures the IP address and port number of computer 1. Database 5 and translation table 6 are queried to check if any temporary phone number has been assigned to the captured IP address and port number. If no temporary phone number has been assigned to the captured IP address and port number a temporary phone number is then assigned. The temporary phone number, IP address of computer 1 and port number of computer 1 are then stored in message database 5 and translation table 6.

In one preferred embodiment message server 4 also captures the receiving mobile telecommunication device number and stores this information with the captured IP address and port number of the originating device. In this embodiment database 5 and translation table 6 are queried to check if any temporary phone number has been assigned to the captured IP address, port number and receiving mobile telecommunication device number.

In the preferred embodiment if there is no temporary phone number assigned to the captured IP address, receiving mobile telecommunication device number and port

number a temporary phone number is assigned and the IP address and port number are stored along with the phone number of the receiving mobile telecommunication device.

In a further alternative embodiment the message server 4 captures the IP address and port number of computer 1 and the receiving mobile telecommunication device number. In this embodiment database 5 and translation table 6 are queried to check if any temporary phone number has been assigned to the captured IP address and port number. In this embodiment the receiving mobile telecommunication device number is captured but not used to determine whether a temporary phone number has been assigned to the originating computer 1.

If there is no temporary phone number assigned to the captured IP address and port number a temporary phone number is then assigned and the IP address and port number are stored along with the phone number of the receiving mobile telecommunication device.

The message received by message server 4 is then sent to telecommunication network 7 with the assigned temporary phone number. The temporary phone number is currently assigned to the captured IP address and port number (and in the preferred embodiment the receiving mobile telecommunication device number) and the message is sent to telecommunication device 12 with the currently assigned temporary phone number.

The message server may also send an acknowledgement to computer 1 that the message has been sent and that the web-site should be kept open in order to receive any reply from the mobile telecommunication device.

When the message server 4 is set up a number of telephone numbers may be assigned to the message server by a telecommunication service provider. For example the message server may be provided with a sequence of 10,000 telephone numbers. Each of these telephone numbers can be assigned as a temporary telephone number for a device attached to the Internet. The number of temporary telephone numbers assigned to the message server may be based on the estimated number of messages simultaneously

using the message server and the estimated average length of use of a temporary telephone number by an Internet device.

If all the temporary telephone numbers have been assigned the message server may search the database and find a temporary telephone number that can be reassigned. Assigning a temporary telephone number may be on the basis of reassigning the telephone number that was the earliest to be assigned. Alternatively the database may include a time stamp of the latest time a message was sent either to or from a computer IP address and port number and receiving mobile telecommunication device number assigned to a temporary telephone number. The message server 4 may then select the temporary telephone number with the longest time since last use on the assumption that it is no longer in use. Alternatively, all temporary telephone numbers exceeding a pre-specified time limit, for example 24 hours, will be reused.

To assist in the availability of temporary telephone numbers, when a user using a web site to send messages to a mobile device closes the web site a message may be sent to the message server that the temporary phone number is no longer needed and the temporary phone number may be added to the pool of available temporary phone numbers.

Telecommunication network 7 delivers the message and temporary phone number to mobile telecommunication device 12. The user of the mobile telecommunication device can then reply to the message using the temporary phone number as the user will normally do with the current SMS or MMS procedure.

When the user of the mobile telecommunication device replies to the message, the message from the mobile telecommunication device passes through telecommunication network 7 to MSC 8. MSC 8 recognises the phone number to which the message is sent as belonging to message server 4 and directs the message to message server 4.

Message server 4 looks up the temporary phone number using message database 5 and translation table 6. If a computer IP address and port number are found assigned to the

temporary phone number the message server directs the message to the assigned IP address and port number.

If no IP address and port number are assigned to the temporary phone number the message server may send a message back to the mobile telecommunication device 12 advising that the message is undeliverable.

In the preferred embodiment, message server 4 looks up the temporary phone number using message database 5 and translation table 6. If a computer IP address and port number and receiving mobile telecommunication device number are found assigned to the temporary phone number the message server directs the message to the assigned IP address and port number.

If no IP address and port number and receiving mobile telecommunication device number are assigned to the temporary phone number the message server may send a message back to the mobile telecommunication device 12 advising that the message is undeliverable.

Because any reply messages are sent to the web site accessed by the user and the computer IP address and port number a computer user must keep the web site open to receiving any incoming messages. A message to this effect may be displayed on the web site. Alternatively when the message server acknowledges that a message has been received it may also send a reminder to keep the web site open to receive any replies.

The foregoing describes the invention including a preferred form thereof. Alterations and modifications as will be obvious to those skilled in the art and intended to be included in the scope hereof as defined by the accompanying claims.

CLAIMS

1. A method of two-way communication between a web browser and a mobile telecommunication device including the steps of;

accessing a web-site via a computer,

sending a message to a mobile telecommunication device from the web-site, and

at a message server capturing the IP address and port number of the computer, assigning a temporary phone number to the IP address and port number of the computer, storing the temporary phone number, IP address of the computer and port number of the computer in a database, and sending the message to the mobile telecommunication device with the temporary phone number.

2. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 1 wherein a set number of temporary phone numbers are available for assigning by the message server.

3. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 1 or claim 2 further including the step of capturing the receiving mobile telecommunication device number at the message server.

4. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 3 further including the step of storing the receiving mobile telecommunication device number in the message server database.

5. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 4 wherein the temporary phone number is assigned based on the IP address and port number of the computer and the receiving mobile telecommunication device number.

6. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 1 or claim 2 the method further including the steps of ;

at the message server receiving a message from a mobile telecommunication device sent to a temporary phone number of the message server, capturing the message and temporary phone number, using the database to match the temporary phone number to a computer IP address and port number, and sending the message to the computer with the matching IP address and port number.

7. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 6 further including the step of at the message server capturing the receiving mobile telecommunication device number.

8. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in claim 7 further including the step of at the message server using the database to match the temporary phone number to a computer IP address and port number and to the receiving mobile telecommunication device number.

9. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in any one of claims 1 to 8 further including the step of sending an acknowledgement message to the web browser when a message is received by the message server.

10. A method of two-way communication between a web browser and a mobile telecommunication device as claimed in any one of claims 1 to 9 further including the step of after the message server receives a message from the web browser the message server sends a message to the web browser informing the user of the web browser that to receive a response the web browser must remain open.

11. A message server arranged to;

capture an IP address and port number of a computer sending a message to a mobile telecommunication device via a web site,

capture the message sent by the computer,

assign a temporary phone number to the IP address and port number of the computer,

store the temporary phone number, IP address of the computer and port number of the computer in a database, and

send the message to the mobile telecommunication device with the temporary phone number.

12. A message server as claimed in claim 11 wherein the web site is provided by a telecommunication service provider.

13. A message server as claimed in claim 11 or claim 12 wherein a set number of temporary phone numbers are available for assigning by the message server.

14. A message server as claimed in any one of claims 11 to 13 wherein the message server is further arranged to capture the receiving mobile telecommunication device number.

15. A message server as claimed in claim 14 further arranged to store the receiving mobile telecommunication device number in the message server database.

16. A message server as claimed in claim 15 further arranged to assign the temporary phone number based on the IP address and port number of the computer and the receiving mobile telecommunication device number.

17. A message server as claimed in any one of claims 11 to 16 wherein the message server is further arranged so that upon receipt of a message from a mobile telecommunication device sent to a temporary phone number of the message server, it

captures the message and temporary phone number,

uses the database to match the temporary phone number to a computer IP address and port number, and

sends the message to the computer with the matching IP address and port number.

18. A message server as claimed in claim 17 further arranged to capture the receiving mobile telecommunication device number.

19. A message server as claimed in claim 18 further arranged to use the database to match the temporary phone number to a computer IP address and port number and the receiving mobile telecommunication device number.

20. A message server as claimed in any one of claims 11 to 19 further arranged to send an acknowledgement message to the web browser when a message is received by the message server.

21. A message server as claimed in any one of claims 11 to 20 further arranged to send a message to the web browser informing the user of the web browser that to receive a response the web browser must remain open after the message server receives a message from the web browser.

MESSAGE SYSTEM

ABSTRACT

A method of two-way communication between a web browser and a mobile telecommunication device including the steps of; accessing a web-site via a computer, sending a message to a mobile telecommunication device from the web-site, and at a message server capturing the IP address and port number of the computer, assigning a temporary phone number to the IP address and port number of the computer, storing the temporary phone number, IP address of the computer and port number of the computer in a database, and sending the message to the mobile telecommunication device with the temporary phone number.

Figure 1

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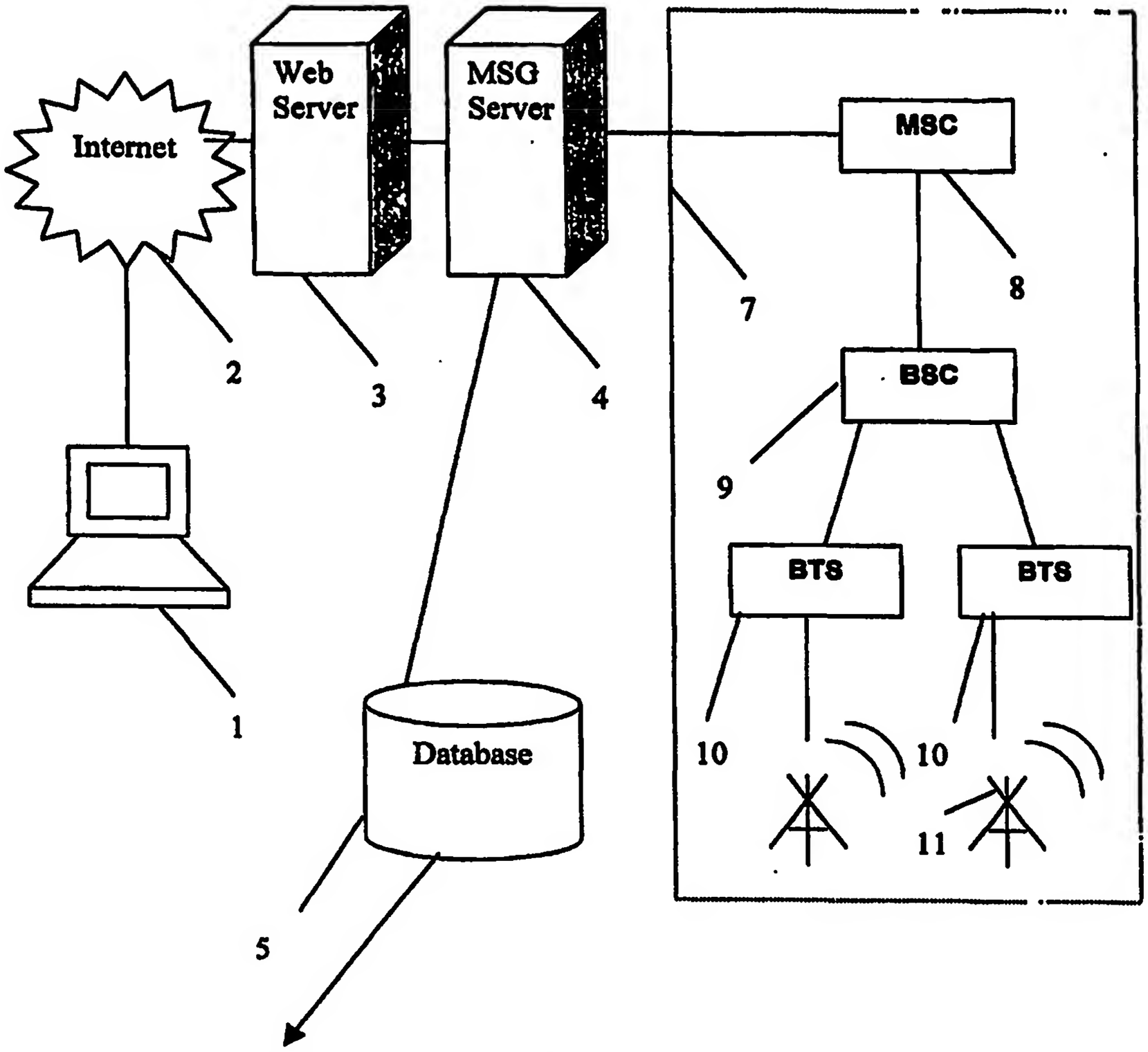
U00002



Temp #	IP Address	Port No	Receiving Device No.
91231234	123.12.12.1	1234	98881234
...	...	...	...

Figure 1

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